REMARKS

In response to the final Office Action mailed July 7, 2005, Applicants respectfully request entry of the amendments herein and reconsideration of this application in view of these amendments and the remarks below. It is respectfully submitted that the amendments herein place this application in condition for allowance, as explained below, or alternatively place the application in better form for appeal if that should be necessary. In this amendment, claims have been either cancelled, re-written in independent form, or amended to be of commensurate scope with the re-written dependent claims Accordingly, no new issues requiring further reconsideration and/or search are raised by this amendment.

Claims 2-4, 6-11, 13-15 and 17-30 were pending in this Application. By this Amendment, claims 2, 6, 13, 17, and 23-26 have been canceled. Applicants expressly reserve the right to prosecute at least some of the canceled claims and similar claims in one or more related Applications. Claims 27-30 have been re-written in independent form, and claims 9-11 and 20-22 have been amended to include all the features recited in claims 27-30. Claims 3-4, 7-11, 14-15, 18-22 and 27-30 are now pending in this Application. Claims 9-11, 20-22 and 27-30 are independent claims.

Rejections under 35 U.S.C. § 112

In the Office Action, claims 27-30 are rejected for reciting both RTSP packets as well as RTP packets. However, these claims recite that the network traffic is RTSP traffic, the first data element is an RTP packet, and the second data element is an RTCP packet. As explained on page 1 of the application as filed, both RTP and RTCP are used within RTSP – an RTSP session includes five channels, one of which is a TCP channel, two of which are RTP channels, and two of which are RTCP channels. Thus, where these claims recite the RTP packets, they are referring to the packets of one of the RTP channels, and not to the overall RTSP session. It is believed that this explanation is sufficient to

overcome this rejection. If the Examiner should disagree, he is invited to suggest alternative claim language that may be acceptable.

Rejection under §103

In the Office Action, the claims were rejected under 35 U.S.C. § 103 as being unpatentable in view of Cunningham and certain statements in the Background of this application. It is noted that previous independent claims 2, 6, 13, and 17 have been cancelled in favor of previous dependent claims 27-30, which have been re-written in independent form, and the other independent claims have been amended to include the same features recited in claims 27-30. This rejection is respectfully traversed with respect to the claims as amended herein.

The pertinent teaching of Cunningham and the Background are summarized in the last response dated June 15, 2005, and are not repeated here except as necessary in the arguments presented below.

All the independent claims of this application now recite specific structure and use of the entries in the network address translation (NAT) data structure, as well as the pertinent structure and operation of the RTP and RTCP protocols/packets of an RTSP session. In particular, as pointed out in the previous response, these claims specify the creation and use of two NAT entries including respective first and second port numbers that are mutually distinct but have predetermined relationships as established by an RTSP session. The example given in the application is that the port number for the RTCP data flow is one greater than the port number for the RTP data flow, in accordance with standard RTSP practice. In particular, the two NAT entries are both created concurrently in response to receipt of an RTP packet. Thus, upon receipt of an RTP packet of a first data flow of the RTSP session (e.g., the video channel), the NAT data structure is populated not only with a first entry that is used to carry out the address translation for the RTP packets, but also with a second entry that is used to carry out the address translation for RTCP packets that are subsequently

received, which is an entirely separate flow. As described in the specification, this operation avoids the potential discarding or mis-routing of RTCP packets due to the absence of a NAT entry and the resulting random assignment of the RTCP flow to a server. By creating the second entry of the NAT data structure upon receipt of the RTP packet, the system is ready to correctly perform address translation for the subsequent RTCP packets so that they are reliably sent to the correct server (i.e., the same server that sent the RTP packet).

It is emphasized that in the claimed technique, network address translation is performed on the basis of both addresses and port numbers, as set forth in the claims in some detail. In an example shown in Figure 4 of the application, an exemplary first entry 92-1 will cause a packet from a first network with a source address/port of 3.3.3.3/6970 and a destination address/port of 1.1.1.1/5555 to have its source address/port translated to 2.2.2.2/6970. This entry is specific to packets having a source address/port of 3.3.3.3/6970; it is not utilized for packets having a different source port number, even if the source address matches. In the claimed technique, address translation is not performed on the basis of the source address alone. Rather, both the source address and the source port number of a packet are translated based on a match of both the source address and source port number with the corresponding fields of a NAT entry.

It is further noted that the above method of performing network address translation (i.e., based on both source address and source port number) has particular implications when used in the context of a multiple-server network such as shown in Figure 1 of the application. The NAT entries for different servers will all utilize the same proxy address (e.g., the network address 2.2.2.2 of the communications device 28), and include respective distinct port numbers to distinguish among the different servers (e.g. among servers 24-1, 24-2, ...). Thus in the illustrated embodiment, the communications device 28 might map the address/port pairs for respective RTP flows of the servers 24-1 and 24-2, for example, to translated address/port pairs such as 2.2.2.2/6970 and 2.2.2.2/7000,

where the different port numbers 6970 and 7000 enable the device 28 to identify which server 24-1 or 24-2 is the source of RTP packets received from the second network. This operation is in addition to the use of distinct port numbers for the different constituent channels or flows (RTP and RTCP) of a single RTSP session of only one server 24. Thus, an entity performing NAT according to the claimed technique (such as device 28) is constrained in how it may use port numbers to identify different servers – it cannot use any port numbers that are used to create any "second entries" for RTSP sessions. Given that an RTSP may have four UDP channels (one RTP/RTCP pair for video, and one pair for audio), a device might allocate groups of four successive port numbers to different servers, for example.

In view of the above, it is hoped that the significance of the claimed technique of automatically creating a second entry having a distinct port number is appreciated. The second entry is not utilized for packets that are part of the first flow of the RTSP session (i.e., the RTP traffic), but rather is utilized for packets that are part of the separate second flow of the session (the RTCP traffic). Moreover, the use of such a distinct port number for such a related flow must be coordinated with the more general use of port numbers to identify different servers when NAT is performed using address/port pairs as set forth in the claims.

It is respectfully urged that neither Cunningham nor the Background teaches or suggests such functionality. In particular, neither Cunningham nor the Background teaches or suggests two concurrently created NAT entries including respective first and second port numbers that are mutually distinct but have predetermined relationships as established by an RTSP session. Cunningham shows a completely different way of performing network address translation, which is based on using a large pool of globally unique addresses that are selected when necessary and mapped to local host addresses. There is no use of port numbers for purposes of address translation shown in Cunningham. Moreover, Cunningham clearly doesn't teach or suggest any technique for

concurrently creating and using NAT entries having distinct-but-related port numbers to handle multiple channels of a single RTSP session. Column 18 lines 28-32 of Cunningham, which is referred to in the Office Action, is understood to mean only that Cunningham's technique may be utilized as described in connection with various types of protocols, but not to suggest that it be used in any particular way in connection with the two distinct protocols (RTP and RTCP) of separate channels of a single RTSP session, nor to suggest that it be somehow modified to operate with port numbers as set forth in the claims.

Thus it is respectfully submitted that Cunningham and the Background do not render the claimed invention obvious under 35 U.S.C. § 103. To begin with, these references are essentially incompatible, because they perform NAT in different ways. As described above, Cunningham teaches only the creation and use of NAT entries for distinct flows utilizing mappings of local addresses to globally unique addresses, and does not perform any kind of port-based address translation. The Background describes a gateway device that performs network address translation for packets of the different channels of an RTSP session using different port-based NAT entries created at different times. Cunningham does not teach or suggest any extension of its NAT technique to incorporate port numbers, nor does the Background remotely suggest incorporating an entirely separate NAT technique based on global addresses such as shown in Cunningham. It is not seen how or why the teaching of Cunningham would be modified to include the teaching of the Background, given their different approaches to network address translation.

Moreover, even if the teaching of these references were somehow combined, there is still no teaching or suggestion to concurrently create two separate NAT entries with distinct-but-related port numbers upon receiving an RTP packet, such that subsequently received RTCP packets are reliably routed to the correct server. Cunningham shows only the concurrent creation of two entries that utilize the same global address, in order to perform address translation for both directions of a single flow. The Background describes only

the normal result of conventional NAT in the context of a server farm and multiple independent flows, which is that separate NAT entries (created non-concurrently) direct the flows to different servers. There is no teaching or suggestion in these references, either separate or together, of concurrently creating two NAT entries with distinct-but-related port numbers to correctly handle the multiple channels of an RTSP session. Because this aspect of the claimed invention is entirely absent from both Cunningham and the Background, these references cannot render the claimed invention obvious under 35 U.S.C. § 103.

Based on the foregoing, it is respectfully submitted that all the claims of this application are allowable over Cunningham, the Background, and the other art of record. Favorable action is respectfully requested. If there are any issues remaining after this amendment, the Examiner is urged to telephone the undersigned attorney to resolve such issues to enable this application to expeditiously proceed to issuance.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-0901.

If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 366-9600, in Westborough, Massachusetts.

Respectfully submitted,

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Attorney Docket No.: CIS01-32(5136)

Dated: September 2, 2005